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INTEGRATED INFORMATION SUPPORT SYSTEM (IIS) VOLUME 5

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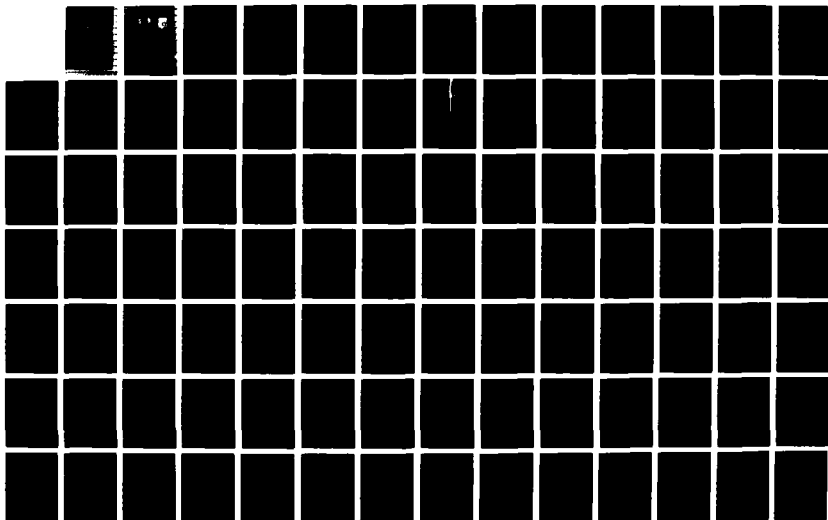
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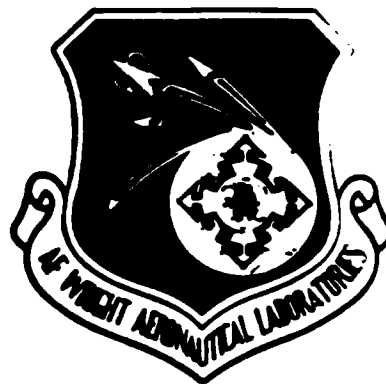


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Volume V
Part 14

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INTEGRATED INFORMATION
SUPPORT SYSTEM (IISS)
Volume V - Common Data Model Subsystem
Part 14 - NDML Precompiler Transform NDML Request from
External Schema to Conceptual Schema
Product Specification

General Electric Company
Production Resources Consulting
One River Road
Schenectady, New York 12345

Final Report for Period 22 September 1980 - 31 July 1985
November 1985

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MATERIALS LABORATORY
AIR FORCE WRIGHT AERONAUTICAL LABORATORIES
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<p>This document is the product specification establishing the design implementation of the IISS Configuration Item PRE4 which will transform a neutral data request from the external to conceptual schema.</p>			
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Integrated Information Support System (IISS)
Vol V - Common Data Model Subsystem
Part 14 - NDML Precompiler Transform NDML Request
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Product Specification

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PREFACE

This product specification covers the work performed under Air Force Contract F33615-80-C-5155 (ICAM Project 6201). This contract is sponsored by the Materials Laboratory, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. It was administered under the technical direction of Mr. Gerald C. Shumaker, ICAM Program Manager, Manufacturing Technology Division, through Project Manager, Mr. David Judson. The Prime Contractor was Production Resources Consulting of the General Electric Company, Schenectady, New York, under the direction of Mr. Alan Rubenstein. The General Electric Project Manager was Mr. Myron Hurlbut of Industrial Automation Systems Department, Albany, New York.

Certain work aimed at improving Test Bed Technology has been performed by other contracts with Project 6201 performing integrating functions. This work consisted of enhancements to Test Bed software and establishment and operation of Test Bed hardware and communications for developers and other users. Documentation relating to the Test Bed from all of these contractors and projects have been integrated under Project 6201 for publication and treatment as an integrated set of documents. The particular contributors to each document are noted on the Report Documentation Page (DD1473). A listing and description of the entire project documentation system and how they are related is contained in document FTR620100001, Project Overview.

The subcontractors and their contributing activities were as follows:

TASK 4.2

Subcontractors

Role

Boeing Military Aircraft
Company (BMAC)

Reviewer

D. Appleton Company
(DACOM)

Responsible for IDEF support,
state-of-the-art literature
search

General Dynamics/
Ft. Worth

Responsible for factory view
function and information
models

PS 620141231
1 November 1985

<u>Subcontractors</u>	<u>Role</u>
Illinois Institute of Technology	Responsible for factory view function research (IITRI) and information models of small and medium-size business
North American Rockwell	Reviewer
Northrop Corporation	Responsible for factory view function and information models
Pritsker and Associates	Responsible for IDEF2 support
SofTech	Responsible for IDEFO support

TASKS 4.3 - 4.9 (TEST BED)

<u>Subcontractors</u>	<u>Role</u>
Boeing Military Aircraft Company (BMAC)	Responsible for consultation on applications of the technology and on IBM computer technology.
Computer Technology Associates (CTA)	Assisted in the areas of communications systems, system design and integration methodology, and design of the Network Transaction Manager.
Control Data Corporation (CDC)	Responsible for the Common Data Model (CDM) implementation and part of the CDM design (shared with DACOM).
D. Appleton Company (DACOM)	Responsible for the overall CDM Subsystem design integration and test plan, as well as part of the design of the CDM (shared with CDC). DACOM also developed the Integration Methodology and did the schema mappings for the Application Subsystems.

PS 620141231
1 November 1985

Subcontractors

Role

Digital Equipment
Corporation (DEC)

Consulting and support of the
performance testing and on DEC
software and computer systems
operation.

McDonnell Douglas
Automation Company
(McAuto)

Responsible for the support and
enhancements to the Network
Transaction Manager Subsystem
during 1984/1985 period.

On-Line Software
International (OSI)

Responsible for programming the
Communications Subsystem on the
IBM and for consulting on the
IBM.

Rath and Strong Systems
Products (RSSP) (In 1985
became McCormack & Dodge)

Responsible for assistance in
the implementation and use of
the MRP II package (PIOS) that
they supplied.

SofTech, Inc.

Responsible for the design and
implementation of the Network
Transaction Manager (NTM) in
1981/1984 period.

Software Performance
Engineering (SPE)

Responsible for directing the
work on performance evaluation
and analysis.

Structural Dynamics
Research Corporation
(SDRC)

Responsible for the User
Interface and Virtual Terminal
Interface Subsystems.

Other prime contractors under other projects who have
contributed to Test Bed Technology, their contributing
activities and responsible projects are as follows:

Contractors

ICAM Project

Contributing Activities

Boeing Military
Aircraft Company
(EMAC)

1701, 2201,
2202

Enhancements for IBM
node use. Technology
Transfer to Integrated
Sheet Metal Center
(ISMC)

PS 620141231
1 November 1985

<u>Contractors</u>	<u>ICAM Project</u>	<u>Contributing Activities</u>
Control Data Corporation (CDC)	1502, 1701	IISS enhancements to Common Data Model Processor (CDMP)
D. Appleton Company (DACOM)	1502	IISS enhancements to Integration Methodology
General Electric	1502	Operation of the Test Bed and communications equipment.
Hughes Aircraft Company (HAC)	1701	Test Bed enhancements
Structural Dynamics Research Corporation (SDRC)	1502, 1701, 1703	IISS enhancements to User Interface/Virtual Terminal Interface (UI/VTI)
Systran	1502	Test Bed enhancements. Operation of Test Bed.

TABLE OF CONTENTS

		<u>Page</u>
SECTION 1.0	SCOPE	1-1
1.1	Identification	1-1
1.2	Functional Summary	1-1
SECTION 2.0	DOCUMENTS	2-1
2.1	Reference Documents	2-1
2.2	Terms and Abbreviations	2-1
SECTION 3.0	REQUIREMENTS	3-1
3.1	Structural Description	3-1
3.2	Functional Flow	3-1
3.3	Interfaces	3-3
3.3.1	Inputs/Outputs	3-3
3.4	Program Interrupts	3-5
3.5	Timing and Sequencing Description	3-5
3.6	Special Control Features	3-5
3.7	Storage Allocation	3-5
3.7.1	Database Definition	3-5
3.7.1.1	File Description	3-5
3.7.1.2	Table Description	3-5
3.7.1.3	Item Description	3-5
3.8	Object Code Creation	3-6
3.9	Adaptation Data	3-6
3.10	Detail Design Description	3-6
3.10.1	Main Program List	3-6
3.10.2	Module List	3-8
3.10.3	External Routines List	3-11
3.10.4	Include File List	3-13
3.10.5	Where Include File Used List	3-15
3.10.6	Where External Routine Used List ...	3-23
3.10.7	Main Program Parts List	3-31
3.10.8	Module Documentation	3-33
3.10.9	Include File Descriptions	3-79
3.10.10	Hierarchy Chart	3-94
3.11	Program Listings Comments	3-129
SECTION 4.0	QUALITY ASSURANCE PROVISIONS	4-1
4.1	Introduction and Definitions	4-1
4.2	Computer Programming Test and Evaluation	4-1

SECTION 1

SCOPE

1.1 Identification

This specification establishes the design of Function PRE4, *Transform ES/CS*, one of the major functions of the Configuration Item *Precompiler* to be built and formally accepted by the ICAM program Office. This CI constitutes one of the subsystems of the Common Data Model Processor (CDMP).

1.2 Functional Summary

The purpose of this Computer Program Configuration Item (CPCI) is to convert an NDML request, expressed in an external schema, and to terminate one or more NDML requests expressed in conceptual schema terms. *Keywords: ICAM (Integrated Computer Aided)*

The following functions will be performed by this CPCI: *Manufacturing*

1. Translate each user view into the corresponding entity classes and each data item into the corresponding attribute use class.
2. Identify the relational join operations needed to construct each user view table.
3. Identify the integrity tests that will be employed with each NDML update request.

SECTION 2

DOCUMENTS

2.1 Reference Documents

1. ICAM Documentation Standards: IDS15012000A, 28 December 1981.
2. D. Appleton Co., CDM Administrators Manual; UM620141000, March, 1984.
3. D. Appleton Co., CDM1-IDEF, Model of the Common Data Model; CCS620141000, 15 May, 1985.
4. D. Appleton Co., Computer Program Development Specification (DS) for ICAM Integrated Support System (IISS) Configuration Item: NDML Precompiler; DS620141200, October, 1984.
5. D. Appleton Co., Embedded NDML Programmer's Reference Manual; PRM620141200, March, 1985.
6. Softech, Inc., NTM Programmer's Guide; UM620140001, July, 1984.
7. Control Data Corp., Computer Program Development Specification (DS) for ICAM Integrated Support System (IISS) Configuration item: NDDL Command Processor: DS620141100, June 1985.

2.2 Terms and Abbreviations

Attribute Use Class: (AUC)

Conceptual Schema: (CS)

Common Data Model Processor: (CDMP)

Common Data Model: (CDM) Describes common data application process formats, form definitions, etc, of the IISS and includes conceptual schema, external, internal schemas, and schema transformation operators.

Data Field: (DF) An element of data in the external schema. It is by this name that an NDML programmer reference

data.

Database Management System: (DBMS)

Distributed Request Supervisor: (DRS) This IISS CDM subsystem configuration item controls the execution of distributed NDML queries and non distributed updates.

Domain: A logical definition of legal attribute class values.

Domain Constraint: Predicate that applies to a single domain.

External Schema: (ES)

Forms: Structured views which may be imposed on windows or other forms. A form is composed of fields where each field is a form, item, or window.

Forms Processor: (FP) A set of callable execution time routines available to an application program for form processing.

Internal Schema: (IS)

Integrated Information Support System: (IISS) A test computing environment used to investigate, demonstrate and test the concepts of information management and information integration in the context of Aerospace Manufacturing. The IISS addresses the problems of integration of data resident on heterogeneous databases supported by heterogeneous computers interconnected via a local Area Network.

Mapping: The correspondence of independent objects in two schemas: ES to CS or CS to IS.

Network Transaction Manager: (NTM) Performs the coordination, communication and housekeeping functions required to integrate the application processes and system services resident on the various hosts into a cohesive system.

Neutral Data Manipulation Language: (NDML) A language developed by the IISS project to provide uniform access to common data, regardless of database manager or distribution criteria. It provides distributed retrieved and single node updates.

ORACLE: Relational DBMS based on the SQL (Structured Query Language, a product of ORACLE Corp, Menlo Park, CA). The CDM is an ORACLE database.

Parcel: A sequential file containing sections source code of the input application program.

Request Processor: (RP) A COBOL program that will satisfy a retrieval or update NDML subtransaction against a particular Database Management System.

User Interface: (UI) Controls the user's terminal and interfaces with the rest of the system.

Virtual Terminal Interface: (VTI) Performs the interfacing between different terminals and the UI. This is done by defining a specific set of terminal features and protocols which must be supported by UI software which constitutes the Virtual Terminal Definition. Specific terminals are then mapped against the Virtual Terminal software by specific software modules written for each type of real terminal supported.

SECTION 3

REQUIREMENTS

3.1 Structural Description

A graphic portrayal of this CPCI is included in Section 3.10. This chart shows the hierarchical relationship of each module making up this CPCI.

This CPCI uses a number of lower level modules to handle specific operations such as:

1. Verifying the user view (CDVIEW).
2. Verifying user data items (CDEMO).
3. Determining all data items in a view (CDEMDA).
4. Match view names with view abbreviations (CDABVW).
5. Determine if a partial entity class was inserted (CDPTEC).
6. Determine if a data item is mapped to conceptual schema (CDPDI).
7. Look up meta data for a conceptual attribute (CDCMD).
8. Determine if a view maps to multiple entities (CDNNEC).
9. Develop type 1 integrity test (CD1NEC, CD1RIT).
10. Develop key uniqueness integrity test (CDKYUQ).
11. Check for modification of a partial inherited key class (CDMPIK).
12. Develop type 2 integrity test (CD2RIT).

3.2 Functional Flow

This CPCI implements the logic defined in the Development Specification for this CPCI. Details of inputs/outputs and

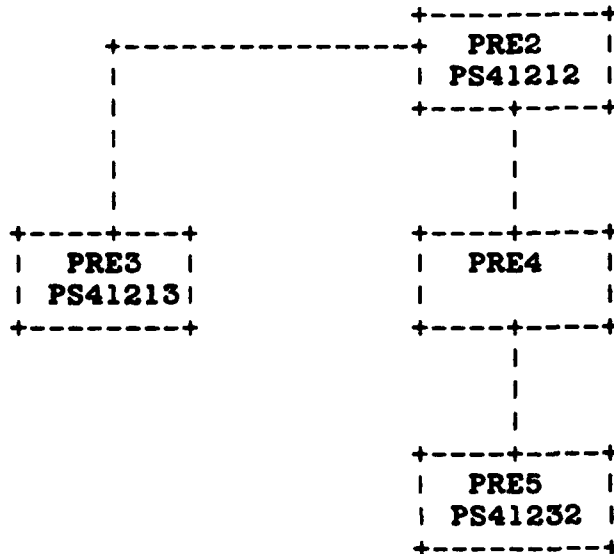
PS 620141231
1 November 1985

relationships between modules are to be found in Section 3.10.

This CPCI has been designated to operate in a batch or interactive mode. It must operate in the system environment established for IISS; that is, use of the Network Transaction Manager. It must use the ORACLE DBMS installed on a DEC VAX computer.

3.3 Interfaces

The following diagram depicts the interface of PRE4 with other CPCI's in the system.



3.3.1 Inputs/Outputs

The following table depicts the inputs and outputs of this CPIC. A detail description for each item can be found in the DS for this CPCI.

<u>INPUT</u>	<u>OUTPUT</u>
ES Qualify List	
ES Action List	
User View Abbreviation List	
Parcel 1 File Name	
Parcel 2 File Name	
Parcel 3 File Name	
Parcel 4 File Name	
Oracle Logon Data Area	
Error File Name	
Host of the precompiler	
Host the AP is to run on	
Source Language	
Code generator table	

PS 620141231
1 November 1985

I/O Status indicator
Error count

3.4 Program Interrupts

Not applicable to this CPCI.

3.5 Timing and Sequencing Description

This CPCI is called for each NDML statement parsed by PRE3 and identified to be semantically correct by PRE2. Thus, PRE4 may execute many times in a precompiler run. PRE 4 in turn calls PRE5 for each conceptual request. A conceptual request is either the original user NDML request or referential integrity tests, which are implemented as a conceptual schema retrievals.

3.6 Special Control Features

Not applicable to this CPCI.

3.7 Storage Allocation

3.7.1 Database Definition

The database used by this CPCI is the Common Data Model (CDM) database. This model is defined by the CDM1, the IDEF-1 model of the CDM, Reference Document Number 3.

3.7.1.1 File Description

No permanent files have been defined for this CPCI. It may use temporary scratch files for such things as generated program source code or temporary query results.

3.7.1.2 Table Description

All tables used by this CPCI have been defined by the Development Specification for this CPCI.

3.7.1.3 Item Description

Not applicable to this CPCI.

3.8 Object Code Creation

The object code for this CPCI will be created by the system integration test team by using defined IISS Software Configuration Management procedures. This CPCI will use the COBOL language compilers.

3.9 Adaptation Data

This CPCI has been coded using ANSI COBOL language. The intent was to provide a transportable system. Any system environment supporting this language, a virtual memory management scheme, the COMM and NTM subsystems of IISS and the ORACLE Database Management System should be able to support this CPCI. Every possible attempt has made been to localize and identify any machine or environment dependent modules through the original design of the IISS and application of Configuration Management Procedures.

3.10 Details Design Description

The following sections have been computer generated for this CPCI.

3.10.1 Main Program List

The following is a list of all "Main Programs" which are modules that are not called by any other module being documented here. These modules are either program entry points or, if they are hooked into another set of programs via subroutine calls, they are the points the external programs can call and therefore enter through. To differentiate between the two types of entry points, look at the individual Module Documentation (section 3.10.8) and look at Module Type for each of the Main Program modules listed. Note whether the routine is a Program, Subroutine, or Function. If it is a Program, it is truly a main program entry point. If not, then it is merely called by other programs not being documented here.

PS 620141231
1 November 1985

TRANSFORM ES TO CS Main Program List

Module Name

Purpose

CDPRE4

EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

3.10.2 Module List

The following is a list of the modules being documented here along with their purpose. Each module has a unique name, no matter what language it was written in.

TRANSFORM ES TO CS Module List

Module Name -----	Purpose -----
CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC_NO
CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
CDABVW	CDABVW-GET THE VIEW NUMBER GIVEN THE USER ENTERED ABBREVIATION
CDACAL	ADD ROWS TO THE CS-ACTION-LIST
CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
CDATXL	ADD ROW TO TEMP-XFORM-LIST
CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
CDNNEC	DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES
CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM
CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module List

Module Name -----	Purpose -----
CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
CDTGVW	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
CDUTXL	UPDATE A ROW OF THE TEMP-XFORM-LIST
CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER

3.10.3 External Routines List

The following is a list of all routines or functions not documented here that are called by modules that are documented here. The first caller, in alphabetical order, is listed as well. The specification in which any module is documented may be found in the Module Documentation Index (Document Number CM 620100001). See section 3.10.6 for a list of the modules that call each of these external routines.

PS 620141231
1 November 1985

TRANSFORM ES TO CS External Routines List

Module Name	First User
-----	-----
CDP4A	CDPRE4
CDPRE6	CDPRE4
ERRPRO	CDINEC
OBINDN	CDPTEC
OCLOSE	CDCMD
ODFINN	CDVTGK
OEXEC	CDPRE4
OFETCH	CDPTEC
OOPEN	CDCMD
OSQL3	CDMPIK
RPTERR	CDEMD

3.10.4 Include File List

The following is a list of all include files called in by modules being documented here. Each include file has a unique name regardless of the language being used. The purpose of each include file is listed as well. A more complete description of each include file is given in section 3.10.9. The purpose listed is the one that is in the source code of the include file.

A purpose of "**** PURPOSE NOT FOUND BY STRIPPER ****" indicates that a purpose statement was not written into the include file itself. The most common reason for this is that the include file comes from system libraries that were not developed by the project, such as 'C' libraries that are provided with the 'C' compiler.

See section 3.10.6 for a set of lists which show all the modules which call in each of these include files.

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1 November 1985

TRANSFORM ES TO CS Include File List

File Name -----	Purpose -----
CEWORK	CS TO ES WORK LIST INFORMATION
CGTABLE	CODE GENERATING TABLE- TRACKS ALL GENERATED SOFTWARE
CHKCDM	IISS CDM CHECK STATUS CODES
CSAL	CONCEPTUAL SCHEMA ACTION LIST
CSQUAL	CONCEPTUAL SCHEMA QUALIFY LIST
ERRCDM	IISS ERROR STATUS CODES FOR CDM MODULES
ERRPRO	PROCESS ERROR INCLUDE FILE
ESAL	EXTERNAL SCHEMA ACTION LIST
ESQUAL	EXTERNAL SCHEMA QUALIFY LIST
ORCLEDA	WS DEFINITION FOR THE ORACLE LOGIN AREA
SDLIST	SEC-DECOMPOSITION-LIST
TJLIST	TEMP JOIN LIST
TXLIST	TEMP TRANSFORM LIST
UVABRUSER	VIEW ABBREVIATION LIST

PS 620141231
1 November 1985

3.10.5 Where Include File Used List

The following lists each include file from 3.10.4 and all the modules documented in this specification which include them. The purpose of each module is listed as well.

TRANSFORM ES TO CS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
CEWORK		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
CGTABLE		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
CHKCDM		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDACAL	ADD ROWS TO THE CS-ACTION-LIST
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDATXL	ADD ROW TO TEMP-XFORM-LIST
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG

TRANSFORM ES TO CS Where-include-file-used List

Include File	Module Name	Module Purpose
-----	-----	-----
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGWV	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER

CSAL

	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDACAL	ADD ROWS TO THE CS-ACTION-LIST
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

TRANSFORM ES TO CS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
CSQUAL		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
ERRCDM		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDACAL	ADD ROWS TO THE CS-ACTION-LIST
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDATXL	ADD ROW TO TEMP-XFORM-LIST
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM

TRANSFORM ES TO CS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGTV	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER
ERRPRO		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDACAL	ADD ROWS TO THE CS-ACTION-LIST
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDATXL	ADD ROW TO TEMP-XFORM-LIST
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS

TRANSFORM ES TO CS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGVW	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER
 ESAL		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDACAL	ADD ROWS TO THE CS-ACTION-LIST
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDNNEC	DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER
 ESQUAL		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK

TRANSFORM ES TO CS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
ORCLEDA	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
SDLIST	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TJLIST	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TXLIST	CDIRIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CDACAL	ADD ROWS TO THE CS-ACTION-LIST

TRANSFORM ES TO CS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
	CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
	CDATXL	ADD ROW TO TEMP-XFORM-LIST
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDNNEC	DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDTGUV	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDUTXL	UPDATE A ROW OF THE TEMP-XFORM-LIST
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER

UVABBR

CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
CDABVW	CDABVW-GET THE VIEW NUMBER GIVEN THE USER ENTERED ABBREVIATION
CDACAQ	ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
CDNNEC	DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES
CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

PS 620141231
1 November 1985

3.10.6 Where External Routine Used List

• The following lists each external function or routine listed in 3.10.3 and all the documented modules which call it. The purpose of each module is listed as well.

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TRANSFORM ES TO CS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
CDP4A	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
CDPRE6	CD2RIT CDACAQ CDKYUQ CDPRE4	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT SET UP KEY UNIQUENESS TEST FOR AN ENTITY EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
ERRPRO	CD1RIT CD2RIT CDACAL CDACAQ CDATXL CDCMD CDEMD CDEMDA CDINEC CDKYUQ CDMPIK CDPDI CDPRE4 CDPTEC	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK ADD ROWS TO THE CS-ACTION-LIST ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT ADD ROW TO TEMP-XFORM-LIST USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST SET UP KEY UNIQUENESS TEST FOR AN ENTITY CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY VERIFY THE EXISTENCE A MAPPED DATA ITEM EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS

TRANSFORM ES TO CS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGVW	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER
OBINDN	CDIRIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGVW	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER

TRANSFORM ES TO CS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
OCLOSE	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
ODFINN	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGTV	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER

TRANSFORM ES TO CS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
OEXEC		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	GDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGVW	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER
OFETCH		
	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG

PS 620141231
1 November 1985

TRANSFORM ES TO CS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGVW	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER
OOPEN	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
OSQL3	CD1RIT	PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
	CD2RIT	SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG

TRANSFORM ES TO CS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDEMDA	EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
	CDINEC	RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
	CDKYUQ	SET UP KEY UNIQUENESS TEST FOR AN ENTITY
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDPDI	VERIFY THE EXISTENCE A MAPPED DATA ITEM
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDRCNR	OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
	CDRCTG	GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
	CDTGVS	RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER
RPTERR		
	CDCMD	USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
	CDEMD	RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
	CDMPIK	CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
	CDNNEC	DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES
	CDPRE4	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CDPTEC	DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
	CDVIEW	VERIFY THE EXISTENCE OF A VIEW IN THE CDM

PS 620141231
1 November 1985

TRANSFORM ES TO CS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
	CDVTGK	VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER

3.10.7 Main Program Parts List

The following lists each Main Program listed in 3.10.1 and all the modules which are called either by that module itself or by any of the documented modules which it calls. It is possible for a non-main module to be listed more than once if it is called by multiple modules. The called modules, in this case known as program parts, are marked as to whether they are documented here. If so, the phrase "well-defined module" appears by the module name, if not it is an "external routine". The Purpose of the Main Program module is listed as well.

TRANSFORM ES TO CS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
CDPRE4	Purpose--	EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
	CD1RIT	Well-defined module
	CD2RIT	Well-defined module
	CDABVW	Well-defined module
	GDACAL	Well-defined module
	CDACAQ	Well-defined module
	CDATXL	Well-defined module
	CDCMD	Well-defined module
	CDEMD	Well-defined module
	CDEMDA	Well-defined module
	CDINEC	Well-defined module
	CDKYUQ	Well-defined module
	CDMPIK	Well-defined module
	CDNNEC	Well-defined module
	CDP4A	External routine
	CDPDI	Well-defined module
	CDPRE6	External routine
	CDPTEC	Well-defined module
	CDRCNR	Well-defined module
	CDRCTG	Well-defined module
	CDTGVS	Well-defined module
	CDUTXL	Well-defined module
	CDVIEW	Well-defined module
	CDVTGK	Well-defined module
	ERRPRO	External routine
	OBINDN	External routine
	OCLOSE	External routine
	ODFINN	External routine
	OEXEC	External routine
	OFETCH	External routine
	OOPEN	External routine
	OSQL3	External routine
	RPTERR	External routine

3.10.8 Module Documentation

The following documentation describes information which is specific to each individual module being documented in this specification as listed in section 3.10.2. It provides a compact way of getting information that would be otherwise buried within each module's source code.

The specific items in this module documentation have the following meanings:

NAME:	Name of program Module.
PURPOSE:	Purpose of Module as detailed in the source code.
LANGUAGE:	Programming language source code is written in. The choices are: VAX-11 FORTRAN C (I/S-1 Workbench 'C') VAX-11 COBOL
MODULE TYPE:	Whether a Program, Subroutine, or Function.
SOURCE FILE:	Name of Source File from file specification.
SOURCE FILE TYPE:	Source File Extension from file specification.
HOST:	Whether this is a host-dependent routine (VAX or IBM) or blank if host-independent.
SUBSYSTEM:	IISS sub-system this file resides in.
SUBDIRECTORY:	Sub-directory of that subsystem in which this file resides.
DOCUMENTATION GROUP:	Name of documentation group of which this source file is a member.
DESCRIPTION:	A description of the module as

obtained from the source code.

ARGUMENTS:

The arguments with which this routine is called if it is a Subroutine or a Function.

INCLUDE FILES:

A list of all the files that are included into this module as well as their purposes.

ROUTINES CALLED:

Subroutines or Functions, either documented or external, called by this module, if any.

CALLED DIRECTLY BY:

The documented routines which call this module, if any.

USED IN MAIN PROGRAM(S):

The documented Main Programs which contain this module in their parts list according to the list in section 3.10.7.

The Module Documentation is arranged alphabetically according to Module Name.

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDIRIT
PURPOSE: PERFORMS SQL SEARCH OF RC TABLE TO
EXTRACT IND EC_NO
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDIRIT
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SEARCH OF RELATION CLASS TABLE TO EXTRACT THE
INDEPENDENT EC NO WHICH CORRESPONDS TO EACH TEMP-RC-NO. CALL
CDACAQ TO FILL ROWS OF CS-ACTION-LIST AND CS-QUALIFY-LIST.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
ES-QUALIFY-LIST = RECRD
UV-ABBR-LIST = RECRD
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CE-WORK-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
NDML-COUNTER = DSPLY [999]

CS-ACTION-LIST = RECRD
CS-QUALIFY-LIST = RECRD
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABBR - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE- TRACKS ALL GENERATED
SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDACAQ - ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND
TYPE 1 RIT
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CD2RIT
PURPOSE: SETS UP TYPE 2 REFERENTIAL INTEGRITY
CHECK
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CD2RIT
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FILL IN CS ACTION LIST AND CS-QUALIFY LIST FOR TYPE 2 RI
TEST. ON EXIT, RESET CSQ-USED TO ITS VALUE ON INPUT.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
IND-EC-NO = DSPLY [S9(4)]
ES-ACTION-LIST = RECRD
ES-QUALIFY-LIST = RECRD
UV-ABBR-LIST = RECRD
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CE-WORK-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
NDML-COUNTER = DSPLY [999]
CS-ACTION-LIST = RECRD

CS-QUALIFY-LIST = RECRD
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABER - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE- TRACKS ALL GENERATED
SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDPRE6
CDCMD - USING TAG NO FOR AUC DETERMINS CS DATA
TYPE/SIZE/DEC DIG
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDABVW
PURPOSE: CDABVW-GET THE VIEW NUMBER GIVEN THE USER
ENTERED ABBREVIAT
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDABVW
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

SCAN THE UV-ABBR-LIST SEARCHING FOR A UVABBR MATCHING THE
INPUT ARGUMENT, ABBREV. IF FOUND, ETURN THE CORRESPONDING
VIEW NUMBER, OTHERWISE ZERO.

ARGUMENTS:

ABBREV = DSPLY [XX]
UV-ABBR-LIST = RECRD
VIEW-NO = DSPLY [S9(4)]
UV-PTR = DSPLY [99]

INCLUDE FILES:

UVABBR - USER VIEW ABBREVIATION LIST

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA

PS 620141231
1 November 1985

TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDACAL
PURPOSE: ADD ROWS TO THE CS-ACTION-LIST
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDACAL
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FILL THE CS ACTION LIST FROM THE TEMP TRANSFORM LIST

ARGUMENTS:

TEMP-XFORM-LIST = RECRD
CS-ACTION-LIST = RECRD
ES-ACTION-LIST = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM	-	IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM	-	IISS CDMP CHECK STATUS CODES
TXLIST	-	TEMP TRANSFORM LIST
CSAL	-	CONCEPTUAL SCHEMA ACTION LIST
ESAL	-	EXTERNAL SCHEMA ACTION LIST
ERRPRO	-	PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

ERRPRO

CALLED DIRECTLY BY:

PS 620141231
1 November 1985

CDPRE4

- EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4

- EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDACAQ
PURPOSE: ADD ROW TO CS ACTION LIST AND CS QUALIFY
LIST AND TYPE 1 RI
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDACAQ
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FOR THE FIRST TEMP-RC-NO ENTRY WHICH MATCHES THE INPUT
ARGUMENT, FILL IN A CS-ACTION ENTRY AND A CS QUALIFY ENTRY.
FOR EACH ADDITIONAL MATCH, FILL IN A CS QUALIFY ENTRY.
ELIMINATE CSQ DUPLICATES AND CALL CDPRES6 TO GENERATE A TYPE 1
REFERENTIAL INTEGRITY TEST.

ARGUMENTS:

TEMP-XFORM-LIST = RECRD
IND-EC-NO = DSPLY [S9(4)]
RC-NO = DSPLY [S9(4)]
ES-ACTION-LIST =
ES-QUALIFY-LIST =
UV-ABBR-LIST =
CODE-GENERATOR-TABLE =
IOS-IND =
PARCL1 =
PARCL2 =
PARCL3 =
PARCL4 =
MY-HOST =
TARGET-HOST =
SOURCE-LANGUAGE =
CE-WORK-LIST =
ERROR-FILE =

ORACLE-LDA =
NDML-COUNTER =
CS-ACTION-LIST =
CS-QUALIFY-LIST =
MODEL-NO =
USER-ERROR-COUNT =
ERROR-STATUS =
RET-STATUS =

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABBR - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE- TRACKS ALL GENERATED
SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
ORCLEDA - WS DEFINITION FOR THE ORACLE LOGIN AREA
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

CDPRE6
CDCMD - USING TAG NO FOR AUC DETERMINS CS DATA
TYPE/SIZE/DEC DIG
ERRPRO

CALLED DIRECTLY BY:

CDIRIT - PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND
EC NO
CDINEC - RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1
REF INTEG TEST

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDATXL
PURPOSE: ADD ROW TO TEMP-XFORM-LIST
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDATXL
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FILL IN NEXT TEMP-XFORM LIST ENTRY WITH CORRESPONDING INPUT
PARAMETERS. ADJUST ROW-USED INDICATOR TO POINT TO LAST USED
ROW GUARDING AGAINST TABLE OVERFLOW.

ARGUMENTS:

EC-NO = DSPLY [S9(4)]
TAG-NO = DSPLY [S9(4)]
CS-TYPE = DSPLY [X]
CS-SIZE = DSPLY [999]
CS-ND = DSPLY [99]
ES-INDEX = DSPLY [99]
NDML-COUNTER = DSPLY [999]
TEMP-XFORM-LIST = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDM MODULES
CHKCDM - IISS CDM CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

PS 620141231
1 November 1985

ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
 TRANSFORMATION
CDTGVW - RETRIEVE ALL TAGS TO WHICH A VIEW MAPS

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
 TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDCMD
PURPOSE: USING TAG NO FOR AUC DETERMINS CS DATA
TYPE/SIZE/DEC DIG
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDCMD
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

- THIS ROUTINE WILL USE A TAG NUMBER OF AN ATTRIBUTE USE
CLASS AND ACCESS THE CDM FOR ITS CONCEPTUAL TYPE, SIZE AND
NUMBER OF DECIMAL DIGITS.
-

ARGUMENTS:

ORACLE-LDA = RECRD
MODEL-NO = DSPLY [S9(4)]
TAG = DSPLY [S9(4)]
ERROR-FILE = DSPLY [X(30)]
EC-NO = DSPLY [S9(4)]
CS-TYPE = DSPLY [X]
CSSIZE = DSPLY [999]
ND = DSPLY [99]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
ORCLEDA - WS DEFINITION FOR THE ORACLE LOGIN AREA
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OCLOSE
OOPEN
OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:

CD2RIT - SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
CDACAQ - ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST
 AND TYPE 1 RIT
CDKYUQ - SET UP KEY UNIQUENESS TEST FOR AN ENTITY
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
 TRANSFORMATION
CDTGVW - RETRIEVE ALL TAGS TO WHICH A VIEW MAPS

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
 TRANSFORMATION

TRANSFORM ES TO CS Module Documentation

NAME: CDEMD
PURPOSE: RETRIEVE EXTERNAL METADATA AND DATA ITEM
NUMBER
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDEMD
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SELECT TO RETURN EXTERNAL METADATA (TYPE, SIZE,
NUMBER OF DECIMALS), AND THE DATA ITEM NUMBER GIVEN THE VIEW
NUMBER AND THE DATA ITEM NAME.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
VIEW-NO = DSPLY [S9(4)]
DI-NAME = DSPLY [X(30)]
ERROR-FILE = DSPLY [X(30)]
DI-NO = DSPLY [S9(4)]
ES-TYPE = DSPLY [X]
ES-SIZE = DSPLY [999]
ES-ND = DSPLY [99]
USER-ERROR-COUNT = DSPLY [9(5)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMF MODULES
CHKCDM - IISS CDMF CHECK STATUS CODES
ERRPRO - PROCESS ERROR INCLUDE FILE

PS 620141231
1 November 1985

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDEMDA
PURPOSE: EXPAND ES ACTION LIST TO HOLD ALL DI
NAMES FOR A USER VIEW
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDEMDA
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

EXTRACT DI NAMES FOR ALL DATA ITEMS IN A USER VIEW. FOR EACH
DI NAME EXTRACTED, MAKE AN ENTRY IN THE ES ACTION LIST. FOR
THE FIRST DI NAME EXTRACTED, EXPAND THE LAST USED ROW OF THE
ES ACTION LIST. FOR EACH ADDITIONAL DI NAME, FILL IN A NEW
ROW.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
VIEW-NO = DSPLY [S9(4)]
ES-ACTION-LIST = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMF MODULES
CHKCDM - IISS CDMF CHECK STATUS CODES
ESAL - EXTERNAL SCHEMA ACTION LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

PS 620141231
1 November 1985

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDINEC
PURPOSE: RETRIEVE IND ENT FOR DEP ENT AND PERFORM
TYPE1 REF INTEG TE
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDINEC
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SEARCH OF RELATION CLASS TABLE TO FIND ANY
IN-DEPENDENT ENTITY CLASSES. FOR EACH FOUND, CALL CDACAQ TO
SET UP TYPE 1 REFERENTIAL INTEGRITY TEST. FIND THE
INDEPENDENT ENTITIES ON WHICH AN ENTITY DEPENDS. IF THERE
ARE ANY, SET UP TYPE 1 REFERENTIAL INTEGRITY TEST.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
ES-QUALIFY-LIST = RECRD
UV-ABBR-LIST = RECRD
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CE-WORK-LIST = RECRD

ERROR-FILE = DSPLY [X(30)]
NDML-COUNTER = DSPLY [999]
CS-ACTION-LIST = RECRD
CS-QUALIFY-LIST = RECRD
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMF MODULES
CHKCDM - IISS CDMF CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABBR - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE- TRACKS ALL GENERATED
SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDACAQ - ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST
AND TYPE 1 RIT
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDKYUQ
PURPOSE: SET UP KEY UNIQUENESS TEST FOR AN ENTITY
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDKYUQ
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FILL IN NEXT ROW OF CS-ACTION-LIST FOR EVERY UNIQUE KC-NO
RETURNED. FILL IN NEXT ROW OF CS-QUALITY-LIST FOR EVERY ROW
RETURNED. ELIMINATE ALL DUPLICATE CS-QUALIFY ENTRIES. FOR
EACH UNIQUE KC-NO, GENERATE KEY UNIQUENESS TEST.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
NDML-COUNTER = DSPLY [999]
CS-ACTION-LIST = RECRD
CS-QUALIFY-LIST = RECRD
ES-ACTION-LIST = RECRD
ES-QUALIFY-LIST = RECRD
UV-ABBR-LIST = RECRD
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]

PS 620141231
1 November 1985

CE-WORK-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMF MODULES
CHKCDM - IISS CDMF CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABBR - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE- TRACKS ALL GENERATED
SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDPRE6
CDCMD - USING TAG NO FOR AUC DETERMINS CS DATA
TYPE/SIZE/DEC DIG
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDMPIK
PURPOSE: CHECK FOR MODIFICATION OF PARTIAL
INHERITED KEY
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDMPIK
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FOR EACH UNIQUE RC-NO IN THE TEMP XFORM LIST, SELECT THE
TAG-NO FROM INHERITED ATT USE WHERE THE RC NOS ARE EQUAL.
FOR EACH TAG-NO SELECTED, SEARCH THE TEMP XFORM LIST FOR A
MATCH. IF FOUND, OK; OTHERWISE GENERATE ERROR MESSAGE.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

PS 620141231
1 November 1985

ROUTINES CALLED:

OSQL3
ODFINN
OBINDM
OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDNNEC
PURPOSE: DETERMINE IF THE VIEW OR DATA ITEMS MAP
TO MULTIPLE ENTITY
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDNNEC
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

SEARCH ALL USED TEMP-EC-NO ENTRIES IN TEMP-XFORM-LIST
VERIFYING THAT ALL EC-NOS ARE EQUAL.

ARGUMENTS:

TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
UV-ABBR-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]

INCLUDE FILES:

TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
UVABBR - USER VIEW ABBREVIATION LIST

ROUTINES CALLED:

RPTERR

PS 620141231
1 November 1985

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDPDI
PURPOSE: VERIFY THE EXISTENCE A MAPPED DATA ITEM
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDPDI
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SEARCH FOR THE TAG NUMBER OF THE PROJECT DATA
ITEM WHOSE VIEW NUMBER AND DATA ITEM NUMBER MATCH THE INPUT
ARGUMENTS AND WHOSE ID MATCHES THE CORRESPONDING DATA ITEM
ID.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
VIEW-NO = DSPLY [S9(4)]
DI-NO = DSPLY [S9(4)]
TAG-NO = DSPLY [S9(4)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3

PS 620141231
1 November 1985

ODFINN
OBINDN
OEXEC
OFETCH
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDPRE4
PURPOSE: EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDPRE4
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

THE FUNCTION OF THIS EXTERNAL-SCHEMA-TO-CONCEPTUAL-SCHEMA TRANSFORMER IS TO CONVERT AN NDML REQUEST EXPRESSED IN EXTERNAL SCHEMA TERMS INTO ONE OR MORE NDML REQUESTS EXPRESSED IN CONCEPTUAL SCHEMA TERMS. THE CONVERSION INVOLVES TRANSLATING EACH USER VIEW INTO THE CORRESPONDING ENTITY CLASSES AND EACH DATA ITEM INTO THE CORRESPONDING ATTRIBUTE USE CLASSES. IT ALSO INVOLVES IDENTIFYING THE RELATIONAL JOIN OPERATIONS THAT ARE NEEDED TO CONSTRUCT EACH USER VIEW TABLE FROM THE ENTITY CLASS TABLES AND IDENTIFYING THE INTEGRITY TESTS THAT WILL BE EMPLOYED WITH EACH NDML UPDATE REQUEST. THIS IMPLEMENTATION WILL NOT SUPPORT DERIVED DATA ITEMS.

ARGUMENTS:

ES-QUALIFY-LIST = RECRD
ES-ACTION-LIST = RECRD
UV-ABBR-LIST = RECRD
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
ORACLE-LDA = RECRD
ERROR-FILE = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]

TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
USER-ERROR-COUNT = DSPLY [9(5)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
SDLIST - SEC-DECOMPOSITION-LIST
TJLIST - TEMP JOIN LIST
TXLIST - TEMP TRANSFORM LIST
CEWORK - CS TO ES WORK LIST INFORMATION
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
CSAL - CONCEPTUAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
UVABBR - USER VIEW ABBREVIATION LIST
ORCLEDA - WS DEFINITION FOR THE ORACLE LOGIN AREA
CGTABLE - CODE GENERATING TABLE- TRACKS ALL GENERATED
SOFTWARE
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OOPEN
RPTERR
CDPRE6
OCLOSE
ERRPRO
CDVIEW - VERIFY THE EXISTENCE OF A VIEW IN THE CDM
CDABVW - CDABVW-GET THE VIEW NUMBER GIVEN THE USER
ENTERED ABBREVIATION
CDEMDA - EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR
A USER VIEW
CDEMD - RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
CDPDI - VERIFY THE EXISTENCE A MAPPED DATA ITEM
CDCMD - USING TAG NO FOR AUC DETERMINS CS DATA
TYPE/SIZE/DEC DIG
CDNNEC - DETERMINE IF THE VIEW OR DATA ITEMS MAP TO
MULTIPLE ENTITY CLASSE
CDPTEC - DETERMINE WHETHER VIEW MAPS TO PART OF AN
ENTITY CLASS

PS 620141231
1 November 1985

CDINEC	- RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
CDKYUQ	- SET UP KEY UNIQUENESS TEST FOR AN ENTITY
CDACAL	- ADD ROWS TO THE CS-ACTION-LIST
CDATXL	- ADD ROW TO TEMP-XFORM-LIST
CDRCTG	- GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
CDUTXL	- UPDATE A ROW OF THE TEMP-XFORM-LIST
CDVTGK	- VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER
CDMPIK	- CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
CDIRIT	- PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
CDTG VW	- RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
CD2RIT	- SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
CDRCNR	- OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
OSQL3	
ODFINN	
OBINDN	
OEXEC	
OFETCH	
CDP4A	

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDPTEC
PURPOSE: DETERMINE WHETHER VIEW MAPS TO PART OF AN
ENTITY CLASS
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDPTEC
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

INSURE THAT TAG NUMBER EXTRACTED FROM ATTRIBUTE_USE_CL
MATCHES AT LEAST 1 TEMP-AUC, OTHERWISE, ERROR.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM	-	IISS ERROR STATUS CODES FOR CDM MODULES
CHKCDM	-	IISS CDM CHECK STATUS CODES
TXLIST	-	TEMP TRANSFORM LIST
ESAL	-	EXTERNAL SCHEMA ACTION LIST
ERRPRO	-	PROCESS ERROR INCLUDE FILE

PS 620141231
1 November 1985

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
RPTERR
OFETCH
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDRCNR
PURPOSE: OBTAIN RELATION CLASS NUMBER FOR NOT IN
SET OPERATION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDRCNR
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

- SEARCH INHERITED ATT USE TABLE FOR THE RC NO WHOSE TAG-NO
MATCHES THE INPUT ARGUMENT.
-

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TAG-NO = DSPLY [S9(4)]
RC-NO = DSPLY [S9(4)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH

PS 620141231
1 November 1985

ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDRCTG
PURPOSE: GET THE RC AND OWNER TAG OF AN INHERITED
ATTRIBUTE
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDRCTG
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SEARCH OF THE INHERITED-ATT-USE TABLE LOOKING FOR
RELATION CLASS NUMBER AND KEY CLASS MEMBER TAG NUMBER WHERE
THE TAG NUMBER MATCHES THE INPUT PARAMETER.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TAG-NO = DSPLY [S9(4)]
RC-NO = DSPLY [S9(4)]
KCM-TAG-NO = DSPLY [S9(4)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMF MODULES
CHKCDM - IISS CDMF CHECK STATUS CODES
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3

PS 620141231
1 November 1985

ODFINN
OBINDN
OEXEC
OFETCH
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDTGVW
PURPOSE: RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDTGVW
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

SELECT ALL TAGS FOR A VIEW, RETRIEVE CONCEPTUAL METADATA AND
FILL IN A ROW OF THE TEMP-XFORM-LIST FOR EACH TAG SELECTED.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
VIEW-NO = DSPLY [S9(4)]
ES-INDEX = DSPLY [99]
NDML-COUNTER = DSPLY [999]
ERROR-FILE = DSPLY [X(30)]
TEMP-XFORM-LIST = RECRD
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

PS 620141231
1 November 1985

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDCMD - USING TAG NO FOR AUC DETERMINS CS DATA
 TYPE/SIZE/DEC DIG
CDATXL - ADD ROW TO TEMP-XFORM-LIST
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
 TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
 TRANSFORMATION

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1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDUTXL
PURPOSE: UPDATE A ROW OF THE TEMP-XFORM-LIST
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDUTXL
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

UPDATE THE TEMP-RC-NO AND THE TEMP-KCM-TAG-NO ENTRIES OF THE
CURRENT ROW OF THE TEMP-XFORM-LIST WITH THE INPUT PARAMETERS.

ARGUMENTS:

RC-NO = DSPLY [S9(4)]
KCM-TAG-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD

INCLUDE FILES:

TXLIST - TEMP TRANSFORM LIST

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

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1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDVIEW
PURPOSE: VERIFY THE EXISTENCE OF A VIEW IN THE CDM
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDVIEW
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SEARCH OF TABLE SEC TO VERIFY A VIEW GIVEN THE
VIEW NAME. THE VIEW NUMBER IS RETURNED. IF THE VIEW
DOESN'T EXIST, 0 IS RETURNED AS THE VIEW NUMBER.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
VIEW-NAME = DSPLY [X(30)]
ERROR-FILE = DSPLY [X(30)]
VIEW-NO = DSPLY [S9(4)]
USER-ERROR-COUNT = DSPLY [9(5)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN

PS 620141231
1 November 1985

OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

PS 620141231
1 November 1985

TRANSFORM ES TO CS Module Documentation

NAME: CDVTGK
PURPOSE: VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS
MEMBER
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDVTGK
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SEARCH OF KEY CLASS MEMBER ON ALL TEMP-AUCS TO
VERIFY THAT THE TAG IS NOT A KEY CLASS MEMBER

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
ERROR-STATUS = DSPLY [9]
USER-ERROR-COUNT = DSPLY [9(5)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM	- IISS ERROR STATUS CODES FOR CDMF MODULES
CHKCDM	- IISS CDMF CHECK STATUS CODES
TXLIST	- TEMP TRANSFORM LIST
ESAL	- EXTERNAL SCHEMA ACTION LIST
ERRPRO	- PROCESS ERROR INCLUDE FILE

PS 620141231
1 November 1985

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
 TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
 TRANSFORMATION

PS 620141231
1 November 1985

3.10.9 Include File Descriptions

The following list contains a purpose and description of each include file listed in 3.10.4 as specified in the source code. The language it is written in is also given.

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: CEWORK
PURPOSE: CS TO ES WORK LIST INFORMATION
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: CGTABLE
PURPOSE: CODE GENERATING TABLE- TRACKS ALL
GENERATED SOFTWARE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CODE GENERATOR TABLE. HOLDS PERTINENT RESULTS ABOUT ALL CODE
GENERATED OR MODIFIED BY THE PRECOMPILER NOTE: ROW 100
RESERVED FOR SWAPPING DURING SORTING.

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: CHKCDM
PURPOSE: IISS CDMP CHECK STATUS CODES
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS ALL STATUS CODES FOR THE CDMP MODULES

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: CSAL
PURPOSE: CONCEPTUAL SCHEMA ACTION LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

TABLE TO HOLD CONCEPTUAL DATA ABOUT THE REQUEST

***** THE CONCEPTUAL SCHEMA ACTION LIST

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: CSQUAL
PURPOSE: CONCEPTUAL SCHEMA QUALIFY LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS CONCEPTUAL SCHEMA INFORMATION FOR THE REQUESTS
QUALIFICATION

THE CONCEPTUAL SCHEMA QUALIFY LIST

AO-A181 960

INTEGRATED INFORMATION SUPPORT SYSTEM (IIS) VOLUME 5 2/2

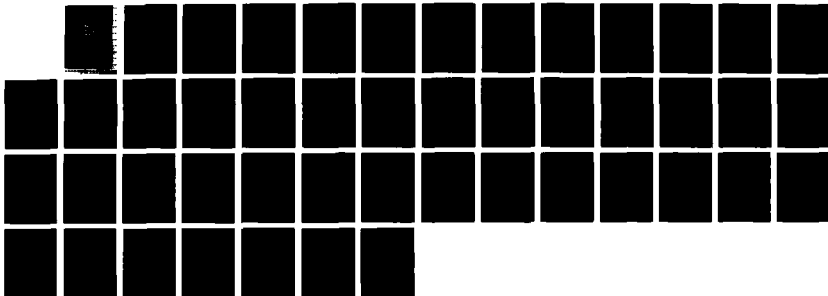
COMMON DATA MODEL S. (U) GENERAL ELECTRIC CO

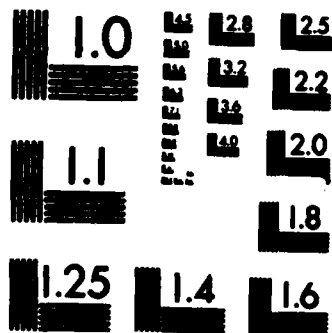
SCHENECTADY NY PRODUCTION RESOURCES CONSU..

UNCLASSIFIED

J L ALTHOFF ET AL. 01 NOV 85 PS-620141231 F/G 12/5

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: ERRCDM
PURPOSE: IISS ERROR STATUS CODES FOR CDMF MODULES
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS ALL ERROR CODES USED BY CDMF *
MODULES FOR ERROR HANDLING *

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: ERRPRO
PURPOSE: PROCESS ERROR INCLUDE FILE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: ESAL
PURPOSE: EXTERNAL SCHEMA ACTION LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS THE EXTERNAL SCHEMA INFORMATION FOR AN NDML REQUEST

THE EXTERNAL SCHEMA ACTION LIST

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: ESQUAL
PURPOSE: EXTERNAL SCHEMA QUALIFY LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS EXTERNAL SCHEMA INFORMATION FOR THE NDML
QUALIFICATION

THE EXTERNAL SCHEMA QUALIFY LIST

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: ORCLEDA
PURPOSE: WS DEFINITION FOR THE ORACLE LOGIN AREA
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THE ORACLE LOGON DATA AREA

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: SDLIST
PURPOSE: SEC-DECOMPOSITION-LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THIS LIST REPRESENTS ALL ENTITY CLASSES AND RELATIONS MAKING UP EITHER THE SURROGATE ENTITY CLASS OR THE COMBINATION OF SEC'S RESULTING FROM JOINS IN THE NDML SELECT STATEMENT. THIS TABLE IS USED AS INPUT TO ROUTINE CDP4A WHICH CAN VERIFY THE LEGALITY OF A SEC STRUCTURE

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: TJLIST
PURPOSE: TEMP JOIN LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THIS WILL TEMPORARILY STORE META-DATA ABOUT JOINED ENTITY
CLASSES MAKING UP AN SEC

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: TXLIST
PURPOSE: TEMP TRANSFORM LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THIS WILL TEMPORARILY STORE METADATA ABOUT AN NDML UPDATE
REQUEST EXPRESSED IN CS TERMS (INTERNAL TO PRE4)

PS 620141231
1 November 1985

TRANSFORM ES TO CS Include File Description

FILE NAME: UVABBR
PURPOSE: USER VIEW ABBREVIATION LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS THE ABBREVIATIONS FOR ALL USER VIEW REFERENCED IN
THE NDML REQUEST

3.10.10 Hierarchy Chart

The following hierarchy charts show the relationships between all of the modules mentioned in the above documentation. A module may call a subroutine several times within its code, but the call will only be shown once as a single relationship on this hierarchy chart. All modules shown at the top of the first page are considered Main Programs as described in section 3.10.1 above.

There is an internal paging scheme as marked by the numbers in the upper right corner of each page. An index after the last page of the chart shows where a routine and its calls are first defined. If a routine has no page reference, it either makes no calls or is an external routine. A continuation box on the end of a tree limb shows where that the tree continues on the page numbered mentioned. A number in a box with a routine name points to the page where the routine is further defined within the hierarchy tree. If there is no number in a box, the routine either makes no calls or is an external routine.

PS 620141231
1 November 1985

1

```
      +-----+  
      |CDPRE4|  
      +-----+  
      |  
+-----+-----+-----+-----+-----+-----+  
|         |         |         |         |         |         |  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
|OOPEN| |RPTERR| |CDPRE6| |OCLOSE| |ERRPRO| |(CONT)|  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
                                         +-----2+
```

PS 620141231
1 November 1985

2

+-----+
|CDPRE4|
+-----+

|

+-----+	+-----+	+-----+	+-----+	+-----+	+-----+
+-----+	+-----+	+-----+	+-----+	+-----+	+-----+
(CONT)	CDVIEW	CDABVW	CDEMDA	CDEMD	(CONT)
+-----1+	+-----3+	+-----+	+-----4+	+-----5+	+-----6+

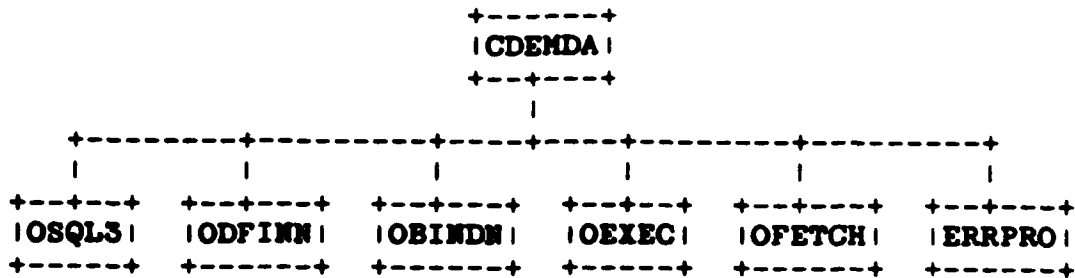
PS 620141231
1 November 1985

3

```
      +-----+  
      |CDVIEW|  
      +-----+  
      |  
+-----+  
|         |         |         |         |         |  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
|OSQL3| |ODFINN| |OBINDN| |OEXEC| |OFETCH| |(CONT)|  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----7+
```

PS 620141231
1 November 1985

4



PS 620141231
1 November 1985

5

```
      +-----+  
      |CDEMD|  
      +-----+  
      |  
+-----+-----+-----+-----+-----+  
|         |         |         |         |         |  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
|OSQL3| |ODFINN| |OBINDN| |OEXEC| |OFETCH| |(CONT)|  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
                                         -8+
```

```
      +-----+
      |CDPRE4|
      +-----+
      |
+-----+-----+-----+-----+-----+-----+
|         |         |         |         |         |         |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| (CONT) | |CDPDI | |CDCMD | |CDNNEC| |CDPTEC| | (CONT) |
+-----2+ +-----9+ +-----10+ +-----+ +-----11+ +-----12+
      |
      |
      +-----+
      |RPTERR|
      +-----+
```

PS 620141231
1 November 1985

7

```
      +-----+
      |CDVIEW|
      +-----+
        |
+-----+-----+
|         |         |
+-----+ +-----+ +-----+
| (CONT) | |RPTERR| |ERRPRO|
+-----+ +-----+ +-----+
      3+
```

PS 620141231
1 November 1985

8

```
      +-----+
      | CDEND |
      +-----+
        |
+-----+-----+
|         |         |
+-----+ +-----+ +-----+
| (CONT) | | RPTERR | | ERRPRO |
+-----+ +-----+ +-----+
      5+
```

PS 620141231
1 November 1985

9

```
      +-----+  
      |CDPDI|  
      +-----+  
      |  
+-----+  
|         |         |         |         |         |  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
|OSQL3| |ODFINN| |OBINDN| |OEXEC| |OFETCH| |ERRPRO|  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
```

PS 620141231
1 November 1985

10

```
      +-----+  
      |CDCMD|  
      +-----+  
      |  
+-----+-----+-----+-----+-----+  
|         |         |         |         |         |  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
|OCLOSE| |OOPEN| |OSQLS| |ODFINN| |OBINDM| |(CONT)|  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
                                     +-----13+
```


PS 620141231
1 November 1985

11

```
      +-----+  
      |CDPTEC|  
      +-----+  
      |  
+-----+  
|         |         |         |         |         |  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
|OSQL3| |ODFINN| |OBINDN| |OEXEC| |RPTERR| |(CONT)|  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
                                         +-----14+
```

PS 620141231
1 November 1985

12

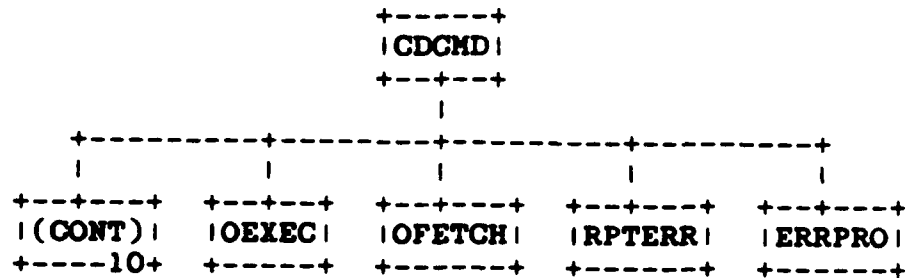
```

      +-----+
      |CDPRE4|
      +-----+
      |
+-----+-----+-----+-----+-----+-----+
|         |         |         |         |         |         |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| (CONT) | |CDINEC| |CDKYUQ| |CDACAL| |CDATXL| |(CONT)|
+-----6+ +-----15+ +-----16+ +-----+ +-----+ +-----17+
      |         |         |         |         |         |
      |         |         |         |         |         |
      +-----+ +-----+
      |ERRPRO| |ERRPRO|
      +-----+ +-----+

```

PS 620141231
1 November 1985

13



PS 620141231
1 November 1985

14

```
      +-----+
      | CDPTEC |
      +-----+
        |
    +-----+-----+
    |           |           |
+---+---+ +---+---+ +---+---+
| (CONT) | | OFETCH | | ERRPRO |
+---+---+ +---+---+ +---+---+
+---11+ +---+---+ +---+---+
```

PS 620141231

1 November 1985

15

+-----+

|CDINEC|

+---+-----+

1

```

+-----+-----+-----+-----+-----+
|         |         |         |         |         |
+-----+-----+-----+-----+-----+
| OSQL3 | | ODFINN | | OBINDN | | OEXEC | | OFETCH | | (CONT) |
+-----+-----+-----+-----+-----+
|         |         |         |         |         |
+-----+-----+-----+-----+-----+

```

PS 620141231
1 November 1985

16

```
      +-----+  
      |CDKYUQ|  
      +-----+  
      |  
+-----+  
|OSQL3|  |ODFINN|  |OBINDN|  |OEXEC|  |OFETCH|  |(CONT)|  
+-----+  +-----+  +-----+  +-----+  +-----+  +-----+  
+-----+  +-----+  +-----+  +-----+  +-----+  +-----19+
```

PS 620141231
1 November 1985

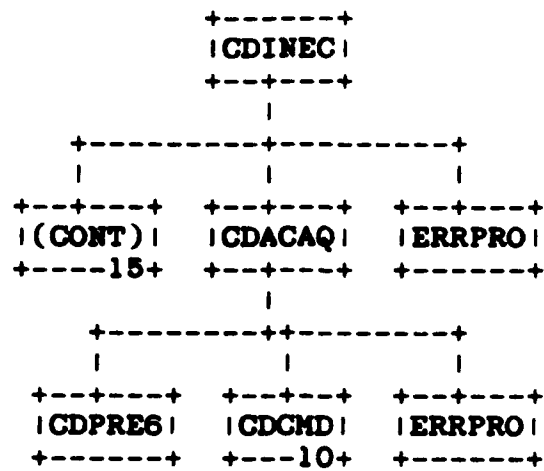
17

```

      +-----+
      |CDPRE4|
      +-----+
      |
+-----+-----+-----+-----+-----+-----+
|         |         |         |         |         |         |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| (CONT) | |CDRCTG| |CDUTXL| |CDVTGK| |CDMPIK| | (CONT) |
+-----12+ +-----20+ +-----+ +-----21+ +-----22+ +-----23+
```

PS 620141231
1 November 1985

18



PS 620141231
1 November 1985

19

```
      +-----+  
      |CDKYUQ|  
      +-----+  
      |  
+-----+-----+-----+-----+  
|         |         |         |         |  
+-----+ +-----+ +-----+ +-----+  
| (CONT) | |CDPRES| |CDCMD| |ERRPRO|  
+-----+ +-----+ +-----+ +-----+  
| -16+   | |         | | -10+   | |         |
```

PS 620141231
1 November 1985

20

```
      +-----+  
      | CDRCTG |  
      +-----+  
      |  
+-----+-----+-----+-----+-----+  
|         |         |         |         |         |  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
|OSQL3| |ODFINN| |OBINDN| |OEXEC| |OFETCH| |ERRPRO|  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
```

PS 620141231
1 November 1985

21

+-----+
|CDVTGK|
+-----+

|

+-----+					
+---+---+	+---+---+	+---+---+	+---+---+	+---+---+	+---+---+
OSQL3	ODFINN	OBINDN	OEXEC	OFETCH	(CONT)
+---+---+	+---+---+	+---+---+	+---+---+	+---+---+	+---+---+
					-24+

PS 620141231
1 November 1985

22

```
      +-----+  
      |CDMPIK|  
      +-----+  
      |  
+-----+-----+-----+-----+-----+  
|         |         |         |         |         |  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
|OSQL3| |ODFINN| |OBINDN| |OEXEC| |OFETCH| |(CONT)|  
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+  
                                         -25+
```

PS 620141231
1 November 1985

23

```

+-----+
|CDPRE4|
+-----+
|
+-----+-----+-----+-----+-----+
|         |         |         |         |         |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
|(CONT)| |CD1RIT| |CDTGVW| |CD2RIT| |CDRCNR| |(CONT)|
+-----17+ +-----26+ +-----27+ +-----28+ +-----29+ +-----30+

```

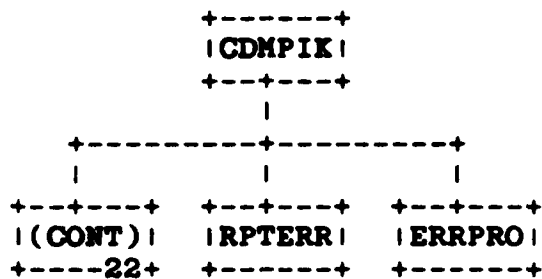
PS 620141231
1 November 1985

24

```
      +-----+  
      |CDVTGK|  
      +-----+  
      |  
+-----+-----+  
|         |         |  
+-----+ +-----+ +-----+  
|(CONT)| |RPTERR| |ERRPRO|  
+-----21+ +-----+ +-----+
```

PS 620141231
1 November 1985

25



PS 620141231
1 November 1985

26

```
      +-----+  
      |CDIRIT|  
      +---+---+  
      |  
+-----+  
|  |  |  |  |  |  |  
+---+---+ +---+---+ +---+---+ +---+---+ +---+---+ +---+---+  
|OSQL3| |ODFINN| |OBINDN| |OEXEC| |OFETCH| |(CONT)|  
+---+---+ +---+---+ +---+---+ +---+---+ +---+---+ +---+---+  
                                     +---31+
```


PS 620141231
1 November 1985

27

+-----+
|CDTGVW|
+-----+

|

+-----+-----+-----+-----+-----+-----+					
+-----+-----+-----+-----+-----+-----+					
OSQL3	ODFINN	OBINDN	OEXEC	OFETCH	(CONT)
+-----+					+-----32+

28

```

+-----+
|         |
+-----+
|OSQL3|  |ODFINN|  |OBINDN|  |OEXEC|  |OFETCH|  |(CONT)|
+-----+  +-----+  +-----+  +-----+  +-----+  +-----+

```

PS 620141231
1 November 1985

29

```
      +-----+
      |CDRCNR|
      +-----+
      |
+-----+-----+-----+-----+-----+
|         |         |         |         |         |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
|OSQL3| |ODFINN| |OBINDN| |OEXEC| |OFETCH| |ERRPRO|
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
```

PS 620141231
1 November 1985

30

```

      +-----+
      |CDPRE4|
      +-----+
      |
+-----+-----+-----+-----+-----+-----+
|         |         |         |         |         |         |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| (CONT) | |OSQL3| |ODFINN| |OBINDN| |OEXEC| | (CONT) |
+-----+ +-----+ +-----+ +-----+ +-----+ +-----+
|    -23  | |         | |         | |         | |         | |    -34  |

```

PS 620141231
1 November 1985

31

```
      +-----+
      |CDIRIT|
      +-----+
        |
    +-----+-----+
    |         |         |
+---+---+ +---+---+ +---+---+
| (CONT) | |CDACAQ| |ERRPRO|
+---26+ +---18+ +-----+
```

PS 620141231
1 November 1985

32

```
      +-----+  
      | CDTGVW |  
      +-----+  
      |  
+-----+-----+-----+-----+  
|         |         |         |         |  
+-----+ +-----+ +-----+ +-----+  
| (CONT) | | CDCMD | | CDATXL | | ERRPRO |  
+-----27+ +-----10+ +-----12+ +-----+
```

PS 620141231
1 November 1985

33

```
      +-----+
      |CD2RIT|
      +-----+
      |
+-----+-----+-----+-----+
|         |         |         |         |
+-----+ +-----+ +-----+ +-----+
| (CONT) | |CDPRE6| |CDCMD| |ERRPRO|
+-----+ +-----+ +-----+ +-----+
| -28    | |      | | -10   | |      |
+-----+ +-----+ +-----+ +-----+
```

PS 620141231
1 November 1985

34

```
      +-----+  
      |CDPRE4|  
      +---+---+  
      |  
+-----+-----+  
|         |         |  
+---+---+ +---+---+ +---+---+  
|(CONT)| |OFETCH| |CDP4A|  
+---30+ +---+---+ +---+---+
```


PS 620141231
1 November 1985

CD1RIT...26
CD2RIT...28
CDABVW
CDACAL...12
CDACAQ...18
CDATXL...12
CDCMD...10
CDEMD...5
CDEMDA...4
CDINEC...15
CDKYUQ...16
CDMPIK...22
CDNNEC...6
CDP4A
CDPDI...9
CDPRE4...1
CDPRE6
CDPTEC...11
CDRCNR...29
CDRCTG...20
CDTGVW...27
CDUTXL
CDVIEW...3
CDVTGK...21
ERRPRO
OBINDN
OCLOSE
ODFINN
OEXEC
OFETCH
OOPEN
OSQL3
RPTERR

3.11 Program Listings Comments

This information is contained in the Module Descriptions in section 3.10.

SECTION 4

QUALITY ASSURANCE PROVISIONS

4.1 Introduction and Definitions

"Testing" is a systematic process that may be preplanned and explicitly stated. Test techniques and procedures may be defined in advance, and a sequence of test steps may be specified. "Debugging" is the process of isolation and correction of the cause of an error.

"Antibugging" is defined as the philosophy of writing programs in such a way as to make bugs less likely to occur and when they do occur, to make them more noticeable to the programmer and the user. In other words, as much error checking as is practical and possible in each routine should be performed.

4.2 Computer Programming Test and Evaluation

The quality assurance provisions for test consists of the normal testing techniques that are accomplished during the construction process. They consist of design and code walk-throughs, unit testing, and integration testing. These tests are performed by the design team. Structured design, design walk-through and the incorporation of "antibugging" facilitate this testing by exposing and addressing problem areas before they become coded "bugs."

END

7-87

DTIC